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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/746,174	12/21/2000	Christopher S. MacLellan	EMC2-085PUS	2915

45456 7590 08/25/2004

RICHARD M. SHARKANSKY
PO BOX 557
MASHPEE, MA 02649

EXAMINER

BAKER, STEPHEN M

ART UNIT	PAPER NUMBER
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2133

DATE MAILED: 08/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/746,174	MACLELLAN, CHRISTOPHER S.	
	Examiner	Art Unit	
	Stephen M. Baker	2133	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7 is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☒ Claim(s) 6 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Allowable Subject Matter

1. The indicated allowability of claims 2-5 is withdrawn in view of the newly discovered references to Ragle, Leitch and Ramsay. Rejections based on the newly cited references follow.
2. Claims 6 and 7 are allowed.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,559,506 to Leitch *et al* (hereafter "Leitch") in view of U.S. Patent No. 4,682,328 to Ramsay *et al* (hereafter "Ramsay") and the published article "A Tutorial on CRC Computations" written by Ramabadran *et al* (hereafter "Ramabadran").

Leitch discloses protecting transmitted data bits by generating single vertical parity and single horizontal parity for every row and column of the data as arranged in an $Q \times R$ bit array, transmitting the resultant bits of the $(R+1) \times (Q+1)$ two-dimensional parity block in column order and interleaved between tiers of other two-dimensional blocks, and validating/correcting the transmitted data upon reception by

validation/correction processing that includes checking the vertical parities and horizontal parities. Although Leitch does not specifically show the columns of original data bits to be one byte each ($Q = 8$), Leitch does not restrict the value of Q to those shown (3 and 4), and furthermore, the term "byte" has been known to be applied to bit-groups as small as 4 bits. Leitch does not describe the row parity check bits of the received data, considered collectively, as a "CRC", nor does Leitch describe the checking of the vertical parity and horizontal parity as involving "comparing" received parity with re-generated parity.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to choose $Q = 8$ in Leitch's system, because Leitch discloses Q as a selectable number, and because an 8-bit data unit is a well known, and thus convenient, data unit size.

Ramabadran discloses that vertical byte parity, which is also known as LRCC, is, for strictly mathematical purposes, a form of CRC, as it has a generator polynomial x^n+1 , where "n" is the number of vertical parity bits. Consequently, Leitch's vertical parity bits for the data bits can be seen as a type of "CRC" for the data bits, and Leitch's vertical parity bit for the horizontal parity bits is the "parity of the CRC" of the data bits.

Ramsay discloses parity checking for a DRAM by comparing received parity with re-generated parity, in the conventional manner.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to implement Leitch's horizontal and vertical parity checking by comparing each received parity bit with a corresponding re-generated parity bit,

because Ramsay discloses parity checking by comparing a received parity bit with a re-generated parity bit, in the conventional manner.

Regarding claims 1, 4 and 5, in re-generating a vertical parity check bit on the horizontal parity bits in Leitch's system, Leitch's system would be "generating the parity of the parity bits of the plurality of bytes of data, such generated parity being the parity of the CRC of such data".

Regarding claims 2 and 3, in re-generating a vertical parity check bit on the horizontal parity bits in Leitch's system, Leitch's system would be "generating parity of the parity bits of the plurality of bytes". In comparing the received vertical parity check bit on the horizontal parity bits in Leitch's system to the re-generated vertical parity check bit on the horizontal parity bits in Leitch's system, Leitch's system would be "comparing such generated parity with the parity bit of the CRC of the data".

5. Claims 1, 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,559,506 to Leitch *et al* (hereafter "Leitch") in view of the published article "A Tutorial on CRC Computations" written by Ramabadran *et al* (hereafter "Ramabadran").

In generating a vertical parity check bit on the horizontal parity bits in Leitch's system, Leitch's system would be "generating the parity of the parity bits of the plurality of bytes of data, such generated parity being the parity of the CRC of such data".

Claim Objections

6. Claim 6 is objected to because of the following informalities: "PP" (three occurrences) apparently should be "P", to agree with the terminology used by applicant everywhere else in the claims and specification. Appropriate correction is required.

Response to Arguments

7. Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new grounds of rejection.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen M. Baker whose telephone number is (703) 305-9681. The examiner can normally be reached on Monday-Friday (11:00 AM - 7:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert DeCady can be reached on (703) 305-9595. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Stephen M. Baker
Primary Examiner
Art Unit 2133

smb